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**REMARKS**

Applicant thanks the Examiner for the attention accorded the present Application in the September 21, 2006 Non-Final Office Action, in which claims 1-16 were pending. By the foregoing amendments, claims 3-4 and 8-16 have been cancelled, and claim 1 has been amended to more clearly specify the present invention. No new matter has been added.

Claims 1-2 and 5-7 are now currently pending in this Application. Based on the above amendments, Applicant respectfully submits that the rejections and objections to these claims have been overcome. Reconsideration of this Application, and allowance of claims 1-2 and 5-7 is respectfully requested in view of the foregoing amendments and the following remarks.

**Drawing Objections**

The drawings were objected to for various reasons. First, the Examiner stated that Figures 1-3 should be designated by a legend such as "Prior Art" because only that which is old is illustrated. Applicant respectfully disagrees with the Examiner and submits that Figures 1-3 show an exemplary engine having components that may be repaired by the invention described in this application. As such, there is no reason to label Figures 1-3 as "Prior Art". Second, the Examiner stated that reference number 30 is not shown on Figure 2. Instead of adding that reference number to Figure 2, Applicant has amended the specification to refer to both Figures 1 and 2. As such, Applicant respectfully submits that these objections have been overcome, and therefore request that these objections be withdrawn.

**Specification Objections**

The specification was objected to for one minor informality, which has been corrected. As such, Applicant respectfully requests that this objection be withdrawn.

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**35 U.S.C. § 102 & § 103 rejections**

Claims 1, 4-9 and 12-16 stand rejected under 35 U.S.C. §102(b) as being anticipated by Arrigoni. Claims 1-3, 8, 10 and 11 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Hellemann in view of Hiskes.

As presently claimed in Applicant's independent claim 1, Applicant's invention comprises "[a] method for repairing a foot of a cast stator vane segment, the method comprising the steps of: removing a portion of a foot from *an inner platform* of a cast stator vane segment; securing a replacement foot section onto the cast stator vane segment using an *electron beam weld*; *heat treating* the replacement foot section and cast stator vane segment; and *machining* the replacement foot section to a suitable shape." The amendments to this claim are supported by Applicant's specification at original claims 3 and 4, and page 3, lines 12-22, among other places.

In contrast, none of Arrigoni, Hellemann and/or Hiskes disclose, nor even suggest, removing a portion of a foot from an inner platform of a cast stator vane segment, using EB welding to join a replacement foot section therein, heat treating the repaired segment, and machining the replacement foot section to a suitable shape.

**a. 35 U.S.C. § 102 rejection**

Arrigoni only discusses repairing an airseal; no other gas turbine engine components are even mentioned anywhere. As Arrigoni notes, an airseal is a "relatively delicate structure",<sup>1</sup> not a robust structurally supportive attachment structure like the inner platform foot repaired by Applicant's invention. Furthermore, the only airseals disclosed in Arrigoni are positioned at the outer end of the vanes/blades,<sup>2</sup> not the inner end (i.e., inner platform area) as claimed by Applicant. Additionally, while Arrigoni mentions that a replacement section can be joined to an airseal in various way, with electron beam welding being one of the ways,<sup>3</sup> Arrigoni never mentions anything about heat treating the repaired airseal after the joining is completed. As such, Arrigoni is deficient as a reference against Applicant's invention.

<sup>1</sup> See Arrigoni, col. 4, lines 7-9.

<sup>2</sup> See Arrigoni, all Figures.

<sup>3</sup> See Arrigoni, col. 5, lines 53-62.

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**b. 35 U.S.C. § 103 rejections**

Hellemann only discusses repairing a blisk; no other gas turbine engine components are even mentioned anywhere. A blisk is "a row of rotor airfoils integrally formed with the perimeter of a rotor disk in a one-piece or unitary blisk configuration,"<sup>4</sup> where the "individual airfoils extend radially outwardly from the rim or perimeter of the disk integrally therewith, and thusly are not individually removable."<sup>5</sup> "Since the blisk airfoils 14 are integrally formed with the supporting disks 16 without retaining dovetails, the airfoils are not removable from the blisk, and thusly are not replaceable as is possible in a conventional bladed-disk utilizing blade dovetails mounted in corresponding dovetail slots in the perimeter of a disk."<sup>6</sup> As is clear from these descriptions of a blisk, there are no inner platforms on the blisk airfoils being repaired by Hellemann. Additionally, the only repairs being performed by Hellemann are on the airfoil surfaces themselves (i.e., on the leading and trailing edges of the airfoil),<sup>7</sup> not on any inner platforms thereof since there are no inner platforms on a blisk. Furthermore, the airfoils being repaired by Hellemann are not robust structurally supportive attachment structures like the inner platform foot repaired by Applicant's invention. As such, one skilled in the art would not look to Hellemann (which only repairs non-structurally supportive, non-attachment airfoil surfaces) to discover a solution to repairing a robust structurally supportive attachment structure like the inner platform foot repaired by Applicant's invention. Therefore, Hellemann is deficient as a reference against Applicant's invention.

Hiskes fails to cure the deficiencies of Hellemann. While Hiskes discloses a method of repairing a platform by removing a portion of the platform and joining a replacement section therein, the only joining method disclosed by Hiskes is diffusion bonding,<sup>8</sup> not electron beam welding as claimed by Applicant. Furthermore, the only platform repaired in Hiskes is the outer platform,<sup>9</sup> not the inner platform as repaired by Applicant's invention. The outer platform is not a robust structurally supportive attachment structure like the inner platform repaired by Applicant's invention (which will

<sup>4</sup> See Hellemann, col. 1, lines 28-31.

<sup>5</sup> See Hellemann, col. 3, lines 23-25.

<sup>6</sup> See Hellemann, col. 3, lines 56-61.

<sup>7</sup> See Hellemann, all Figures, leading and trailing edges 24, 26.

<sup>8</sup> See Hiskes, col. 8, line 64 to col. 9, line 1; and col. 10, lines 12-19.

<sup>9</sup> See Hiskes, Figure 2, inner platform 36 and outer platform 38.

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have much more centrifugal force applied to it during operation of the gas turbine engine than the outer platform). Additionally, the only damage being repaired by Hiskes is damage to the airfoil surface itself, near where the airfoil surface meets the platform,<sup>10</sup> not on any inner platforms like those repaired by Applicant's invention. As such, one would not look to Hiskes (which only repairs non-structurally supportive airfoil surfaces near the outer platforms with diffusion bonding) to discover a solution to repairing a robust structurally supportive attachment structure like the inner platform foot repaired by Applicant's invention. Therefore, Hiskes is deficient as a reference against Applicant's invention.

None of Arrigoni, Hellemann and/or Hiskes anticipate, disclose, nor even suggest, repairing an inner platform foot in the manner claimed by Applicant. Based on the above arguments and amendments, Applicant respectfully submits that independent claim 1 of the present invention is patentably distinguished from Arrigoni, Hellemann and Hiskes. As claims 3-4 and 8-16 have been cancelled, and claims 2 and 5-7 depend from claim 1, the discussion above applies to these claims as well. Further, these claims each include separate novel features. Thus, Applicant respectfully requests that the Examiner withdraw these rejections and allow pending claims 1-2 and 5-7.

### CONCLUSION

Applicant respectfully submits that the arguments presented above successfully traverse the objections and rejections given by the Examiner in the Office Action. For the above reasons, it is respectfully submitted that the pending claims patentably distinguish the present invention from the cited references. Allowance of pending claims 1-2 and 5-7 is therefore respectfully requested.

As this response is being timely filed within six (6) months of the mailing date of the Non-Final Office Action dated 09/21/06, Applicant believes that the only fees due are \$1020 for a three (3) month extension of time. The Commissioner is authorized to charge this \$1020 and any additional fees that may be due, or credit any overpayment, to Deposit Account Number 21-0279, Order No. EH-11046.

<sup>10</sup> See Hiskes, col. 6, lines 40-44 and Figures 2, 4, 6 and 7, junction T.

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Should the Examiner have any questions, or determine that any further action is necessary to place this Application into better form for allowance, the Examiner is encouraged to telephone the undersigned representative at the number listed below.

Respectfully submitted,

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